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**September 16, 2006; Updated September 19, 2006 (2nd update)**

## Nationwide *E. Coli* O157:H7 Outbreak: Questions & Answers

An outbreak of *E. coli* O157:H7 infection is being investigated. Currently the investigation indicates that fresh spinach and salad blends containing fresh spinach are a source for this outbreak. FDA advises at this time that people not eat *any* fresh spinach or salad blends containing fresh spinach that are consumed raw.

On 9/15/06, Natural Selection Foods, LLC, of San Juan Bautista, California announced a voluntary recall of all of products that contain fresh spinach with "Best if Used by Dates" of August 17, 2006 through October 1, 2006. (See additional information about brands associated with Natural Selection Foods below).

On 9/17/06, another company, River Ranch, of California, announced a voluntary recall of spring mix containing spinach. River Ranch obtains bulk spring mix containing spinach from Natural Selections for processing and packaging. The following brands are included in the River Ranch recall: Fresh N' Easy Spring Mix and Hy-Vee Spring mix containing baby spinach, distributed to retailers in Texas, Iowa and New Mexico. The River Ranch product included in the recall is packed in 5 oz. bags and 5 oz. plastic trays.

Other companies and brands of fresh spinach and products that contain fresh spinach may also be involved in this outbreak; FDA and CDC continue to investigate this possibility.

**UPDATED** To date, 131 cases of illness related to this outbreak have been reported to the Centers for Disease Control and Prevention (CDC) in 21 states including 20 cases involving a type of kidney failure called hemolytic uremic syndrome (HUS), 66 hospitalizations, and one death.

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### **What is *E. coli* O157:H7**

The *E. coli* O157:H7 is a bacterium that causes diarrhea that is often bloody; the diarrhea can be accompanied by abdominal cramps. Fever may be absent or mild. Symptoms usually occur within 2-3 days following exposure, but may occur as soon as 1 day following exposure or up to one week following exposure. Healthy adults can typically recover completely from *E. coli* O157:H7 exposure within a week. However, some people, especially young children and the elderly, can develop Hemolytic Uremic Syndrome (HUS) as a result of exposure to *E. coli* O157:H7, a condition that can lead to serious kidney damage and even death.

### **What does FDA advise people to do?**

Currently, the FDA advises that people not eat *any* fresh spinach or salad blends containing fresh spinach that are consumed raw. Individuals who believe they may have experienced symptoms of illness after consuming fresh spinach or salad blends containing fresh spinach are urged to contact their health care provider.

### **What is FDA's recommendation for the disposal of fresh spinach or products containing fresh spinach?**

FDA recommends that the product be thrown away.

### **What types of products are NOT included in this outbreak?**

Spinach products other than fresh and raw are NOT included in this outbreak.

### **Are any other types of leafy greens included in this outbreak?**

Any other type of leafy green (lettuces, collard greens, kale) are NOT included in this outbreak.

### **What is an outbreak?**

An outbreak is defined by the CDC as two (2) or more cases of the same disease related to a common exposure.

### **In what states have illnesses been reported?**

**UPDATED** To date, the states that have reported illnesses include: California, Connecticut, Idaho, Illinois, Indiana, Kentucky, Maine, Michigan, Minnesota, Nebraska, Nevada, New Mexico, New York, Ohio, Oregon, Pennsylvania, Utah, Virginia, Washington, Wisconsin, and Wyoming. The implicated product was also distributed to Canada, Mexico, and Taiwan. This outbreak is ongoing, therefore the number of illnesses and states involved may continue to increase.

### **What company and brands are included in the current recall?**

On 9/15/06, Natural Selection Foods, LLC, of San Juan Bautista, California announced a voluntary recall of all products that contain fresh spinach with "Best if Used by Dates" of August 17, 2006 through October 1, 2006. (See additional information about brands associated with Natural Selection Foods below). Other companies and brands of fresh spinach and fresh spinach containing products may also be involved in this outbreak; FDA and CDC continue to investigate this possibility.

**UPDATED** Natural Selection Foods, LLC brands include: Natural Selection Foods, Pride of San Juan, Earthbound Farm, Bellissima, Dole, Rave Spinach, Emeril, Sysco, O Organic, Fresh Point, River Ranch, Superior, Nature's Basket, Compliments, Trader Joe's, Ready Pac, Jansal Valley, Cheney Brothers, D'Arrigo Brothers, Green Harvest, Mann, Mills Family Farm, Premium Fresh, Pro-Mark, Snoboy, The Farmer's Market, Tanimura & Antle, President's Choice, Cross Valley, and Riverside Farms.

On 9/17/06, another company, River Ranch, of California, announced a voluntary recall of spring mix containing spinach. River Ranch obtains bulk spring mix containing fresh spinach from Natural Selections for processing and packaging. The following brand names are included in the River Ranch recall: Fresh N' Easy Spring Mix and Hy-Vee Spring mix containing baby spinach, distributed to retailers in Texas, Iowa and New Mexico. The River Ranch product included in the recall is packed in 5 oz. bags and 5 oz. plastic trays.

**When was the onset of the first illness related to this outbreak?**

The first illness connected to this outbreak thus far began on August 2, 2006, although most illnesses reported to date cluster with onsets from August 26 - September 6, 2006.

**What advice does FDA have for the industry?**

Commercial food establishments should not sell fresh spinach or salad blends containing fresh spinach to consumers. Nor should food establishments utilize fresh spinach or salad blends containing fresh spinach as an uncooked ingredient in food products to be consumed by their customers. Commercial food establishments should also avoid opening and minimize the handling of fresh spinach and other fresh spinach containing products to prevent the potential for cross contamination of other foods and food-contact surfaces.

**Who is working on this outbreak?**

FDA continues to work closely with the U.S. Centers for Disease Control and Prevention (CDC) and state and local health departments to determine the cause and scope of this outbreak.

**Is the government conducting tests?**

Yes. The federal (principally CDC and the FDA) and state governments are working together to analyze samples from ill persons and product samples in an attempt to quickly identify the source(s) of the outbreak.

The outbreak strain of *E. coli* O157:H7 from ill persons is being "fingerprinted" at public health laboratories around the country, as part of

PulseNet (the network of public health laboratories that sub-type bacteria). All *E. coli* O157:H7 strains associated with this outbreak have the same "fingerprint" (DNA pattern).

The states are collecting and analyzing samples of suspect foods. FDA has offered assistance to the states analyzing such samples as needed.

**What steps has FDA taken to reduce the potential for outbreaks, specifically *E. coli* O157:H7 outbreaks, associated with raw produce?**

The FDA developed the [Lettuce Safety Initiative](#) in response to recurring outbreaks of *E. coli* O157:H7 in lettuce. The primary goals of the initiative are to reduce public health risks by focusing on the product, agents and areas of greatest concern and to alert consumers early and respond rapidly in the event of an outbreak. On August 24, 2006, the State of California Department of Health Services and Department of Food and Agriculture and the FDA met with industry and academia to further clarify the goals, objectives and the next steps for the Lettuce Safety Initiative. This meeting was facilitated by the Western Institute for Food Safety and Security. This initiative is based on the [2004 Produce Safety Action Plan](#), intended to minimize the incidence of food borne illness associated with the consumption of fresh produce.

Since 1995, there have been 19 outbreaks of foodborne illness caused by *E. coli* O157:H7 for which lettuce or leafy greens were implicated as the outbreak vehicle. Although tracebacks to growers were not conducted (or "not conclusive") in all of the outbreak investigations, a majority of the outbreaks, including the recent outbreak in September of 2005, traced product back to California, many of which were from the Salinas Valley, though not exclusively.

**Does the FDA's advice not to eat *any* fresh spinach or salad blends containing fresh spinach apply to both organic and non-organic products?**

Yes.

**Can people cook the fresh spinach or salad blends containing fresh spinach?**

As stated above, the FDA is currently recommending that the public not consume fresh (uncooked) spinach or salad blends containing fresh spinach. However, *E. coli* O157:H7 in spinach can be killed by cooking at 160 degrees Fahrenheit for 15 seconds. If consumers choose to cook the spinach they should follow these cooking instructions and also remember to take steps to avoid cross-contamination of the fresh spinach with other foods and food contact surfaces and to wash hands, utensils, and surfaces with hot, soapy water before and after handling the spinach.

**Have there been previous outbreaks involving fresh spinach?**

Yes. A previous outbreak involving fresh spinach occurred in California in October of 2003. Sixteen (16) cases of illness were reported and two (2) people died. The causative agent was *E. coli* O157:H7.

**When did FDA first receive information regarding the current outbreak?**

FDA first became aware of the current outbreak on September 13, 2006. FDA will continue to release additional information as it becomes available.

**NEW Where in the farm to table continuum is fresh produce most likely to become contaminated? What are the potential sources for produce contamination?**

FDA's 1998 [Guide to Minimize Microbial Contamination of Fresh Fruits and Vegetables](#) (also referred to as the Good Agricultural Practices (GAPs) guide) describes potential sources of microbial contamination in the field and packing house environments and makes broad scope recommendations for how to reduce or minimize opportunities for contamination.

According to the GAPs guide, areas that should be considered to minimize the potential for the microbial contamination of produce include: agricultural water (e.g., for irrigation or crop protection sprays); wild and domestic animals; worker health and hygiene; the production environment (use of manure, previous land use, and use of adjacent land); post harvest water quality (water used to wash or cool produce) and sanitation of facilities and equipment. Our experience in outbreak investigations since 1998 points to the importance of these areas as being significant to avoid contamination of fresh produce at the farm or packinghouse. We also know that there is still a substantial need for additional produce safety research.

FDA focused on the farm and packing facilities because of a need to raise awareness about food safety at these stages of the supply chain. FDA's 2004 Produce Safety Action Plan, however, recognizes that contamination can happen at any point in the supply chain.

**NEW How is the cause or source of an *E. coli* O157:H7 outbreak determined?**

In the current spinach *E. coli* O157:H7 outbreak, the fact that illnesses are so dispersed (over 21 states to date) suggests that the contamination likely happened early in the distribution chain. The investigation into the possible source and cause of contamination is ongoing, including on the farm and in processing plants.

**NEW Does FDA issue assignments to sample and test domestic and foreign produce?**

FDA regularly issues assignments to sample both domestic and foreign fresh produce items. Reports of those assignments are posted on FDA's website.

**NEW Has FDA conducted outreach/education activities regarding fresh produce safety?**

FDA has the lead for foreign GAPs education/outreach and has been working with a number of food safety partners in other countries, and in the U.S., on a variety of programs targeted at the safety of fresh produce. FDA's produce safety action plan, instituted in 2004 and ongoing, contains four main objectives and many specific milestones to address produce safety, including outreach and education activities. Additionally, FDA has been distributing information materials in English and Spanish on the safe handling of raw produce and fruit and vegetable juices to health educators, state and local health agencies. FDA in conjunction with the Produce Marketing Association and the Partnership for Food Safety Education developed a multi-faceted national produce handling education campaign. Launched two years ago, this education program utilizes the media, food safety advocates and Partnership members to communicate safe handling recommendations about produce to consumers.

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[Spinach and \*E. coli\* Outbreak](#) (including press releases)

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[National Food Safety Programs](#)

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FDA/Center for Food Safety & Applied Nutrition  
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